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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,045	09/08/2000	Atsushi Murashima	P/1878-163	2545

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Steven I. Weisburd, Esq.
Dickstein Shapiro Morin & Oshinsky LLP
1177 Avenue of the Americas-41st Floor
New York, NY 10036

EXAMINER	
LERNER, MARTIN	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/658,045	MURASHIMA, ATSUSHI	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 26 April 2005.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 to 22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 2 to 19 is/are allowed.

6)☒ Claim(s) 1 and 20 to 22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 06 November 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1 and 20 to 22 are rejected under 35 U.S.C. 102(e) as being anticipated by *Jarvinen et al.*

Regarding independent claim 1, *Jarvinen et al.* discloses a method and apparatus for generating comfort noise by decoding speech, comprising:

"calculating a norm of said excitation signal for each fixed period" – the random excitation gain $g_{cn}(j)$ is computed for each subframe, based on the energy of the LP residual signal of the subframe, according to equation (10); random excitation gain $g_{cn}(j)$ is an average ("norm") of the LSF prediction residual signals $r(n)$ for 39 samples of a subframe *j*, normalized by denominator 10 and scaling factor 1.286 (column 24, lines 24 to 40); compare Equation (10) with Page 22, Line 5 of the Specification, which is Applicant's calculation for a "norm"; Merriam-Webster's Dictionary defines a "norm" as an "average";

"smoothing said calculated norm using a norm obtained in a previous period" – the computed random excitation gain values are averaged and updated in the first

subframe of each frame to produce $g_{cn}^{mean}(n)$ according to Equation (11); random excitation gain value $g_{cn}^{mean}(n)$ is computed based upon an average of the last six frame values, each having four subframes, of random excitation gain $g_{cn}(n-i)(j)$ ("using a norm obtained in a previous period") (column 24, lines 45 to 63); implicitly, averaging over the last six frames produces a "smoothing" of the value for random excitation gain value $g_{cn}^{mean}(n)$ for the comfort noise;

"changing amplitude of said excitation signal in said period using both, and using a relation between, said calculated norm and said smoothed norm" – in the decoder, the excitation 212 is formed by first generating the white noise excitation sequence 114 with random excitation generator 110, which is then scaled by g_{mean} in scaling block 115 (column 8, lines 40 to 47: Figure 2b); RESC-parameters drive the RE spectrum control filter 211, which, in combination with the random excitation generator 110, together designated a CN-excitation generator 210, produce an excitation sequence 212, or excitation signal (column 8, line 67 to column 9, line 28: Figure 2b); $g_{cn}^{mean}(n)$ is the "smoothed norm" and is calculated from components of $g_{cn}(j)$, "said calculated norm"; scaling the excitation with $g_{cn}^{mean}(n)$ involves "using both said calculated norm and said smoothed norm" because $g_{cn}^{mean}(n)$ ("said smoothed norm") is calculated from $g_{cn}(j)$ ("said calculated norm") by Equation (11) (column 24, lines 24 to 63); similarly, scaling the excitation with $g_{cn}^{mean}(n)$ involves "using a relation between said calculated norm and said smoothed norm" because $g_{cn}^{mean}(n)$ ("said smoothed norm") is calculated from $g_{cn}(j)$ ("said calculated norm") by Equation (11), where Equation (11) is "a relation between said calculated norm and said smoothed norm" (column 24, lines 24 to 63);

"driving said filter by said excitation signal with the changed amplitude wherein the excitation signal has a large energy fluctuation and temporal fluctuation of said excitation signal is reduced" – synthesis filter 112 receives the white noise sequence from random excitation generator 110, as scaled by g_{mean} in scaling block 115; the spectrally controlled excitation 212 is then used in the speech synthesis filter 112 to produce comfort noise (column 8, line 40 to column 9, line 19: Figure 2b); implicitly, averaging excitation gain values over the past six frames would provide some degree of reducing temporal fluctuations of the excitation signal (column 24, lines 45 to 63: Equation (11)); in general, *Jarvinen et al.* discloses that the background noise on the transmit side varies considerably, and may contain strong impulse-type noise bursts, needing to be averaged or smoothed ("the excitation signal has a large energy fluctuation") (column 2, lines 49 to 58).

Allowable Subject Matter

3. Claims 2 to 19 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter:

Regarding independent claims 3 and 12, the prior art does not disclose or suggest dividing an excitation signal by a norm. Applicant's Specification, Page 21, Line 21 to Column 22, Line 15, discloses an excitation signal normalizing circuit that obtains a shape vector $s_{exc}^{(mNssfr+1)}(i)$ by dividing excitation vector $x_{exc}^{m}(i)$ by a normalized gain $g_{exc}(m\ Nssfr+1)$. (See Equation at Page 22, Line 13) The prior art of

record does not disclose or suggest a combination of dividing an excitation signal by a norm and multiplying the excitation signal by a smoothed norm.

Response to Arguments

5. Applicant's arguments filed 26 April 2005 have been fully considered but they are not persuasive.

Firstly, Applicant argues that *Jarvinen et al.* does not disclose that the excitation signal has a large energy fluctuation. Applicant states that *Jarvinen et al.* discloses a white noise input signal having a relatively small energy fluctuation, and is only effective for signals having relatively small fluctuations in energy. As such, Applicant maintains that *Jarvinen et al.*'s method is not effective for a general signal having a large fluctuation in energy. This position is not convincing.

Applicant's statement that *Jarvinen et al.* does not disclose an excitation signal that has a large energy fluctuation is unsupported, and in fact, is contrary to the disclosure of *Jarvinen et al.* Specifically, *Jarvinen et al.* states that, in general, background noise on the transmit side is not stationary but varies considerably. Sometimes, stationary background noise may contain strong impulse-type bursts. (Column 2, Lines 49 to 58) The discussion of the general variability of the background noise by *Jarvinen et al.* provides a motivation for averaging and smoothing of the signal. While it is true that *Jarvinen et al.* utilizes a white noise source that is spectrally flat to generate an excitation signal, it is also true that the excitation signal sought to be generated is synthesized to approximate a smoothed version of the actual background

noise. Thus, *Jarvinen et al.* discloses synthesizing an excitation signal that has large energy fluctuations due to background noise that varies considerably and may contain strong impulse-type bursts.

Secondly, Applicant argues that *Jarvinen et al.* smoothes the excitation signal only with an averaged gain g_{mean}. Applicant cites Column 8, Lines 40 to 47, and Figure 2b of *Jarvinen et al.* Applicant says that the norm, which is not subjected to an averaging operation, is not used. Applicant states that the invention smoothes the excitation using both of the averaged norm and the norm before averaging. Applicant maintains that the norm is calculated from the excitation, which is the object of the smoothing. Thus, Applicant concludes that the invention differs in the manner of smoothing of the excitation from *Jarvinen et al.* This position is traversed.

Applicant's citation of an averaged gain g_{mean}, at Column 8, Lines 40 to 47, and Figure 2b of *Jarvinen et al.*, is directed to an earlier embodiment from that relied upon for rejecting independent claims 1 and 20 to 22. Specifically, the embodiment disclosing an averaged gain g_{mean} is a simpler embodiment with respect to later-described random excitation gain g_{cn} and an averaged random excitation gain $g^{mean}{}_{cn}$ (column 22, lines 5 to 16; column 24, lines 24 to 63). Thus, one skilled in the art would recognize that *Jarvinen et al.* modifies a calculation of averaged gain g_{mean} from the embodiment of Figure 2b to provide an averaged random excitation gain $g^{mean}{}_{cn}$ according to Equations (10) and (11) (column 22, lines 5 to 16; column 24, lines 24 to 63), while still scaling the excitation with a modified gain as illustrated in Figure 2b.

Jarvinen et al. uses both an averaged gain and a smoothed gain, and not simply a norm, as contended by Applicant. Those skilled in the art would recognize that smoothing of a signal is equivalent to averaging the signal over time. Applicant should not require *in haec verba* disclosure by *Jarvinen et al.* Averaging of the energy for each subframe is disclosed by Equation (10) of *Jarvinen et al.*, which is equivalent to Applicant's claimed "calculating a norm of said excitation signal for each fixed period." Thus, averaging the energy for each subframe, by Equation (10), calculates a norm of all the samples in a subframe, as a "norm" is defined as "an average". Further, smoothing of the calculated norm using a norm in a previous period" is provided by Equation (11) of *Jarvinen et al.*, as average random excitation gain g^{mean}_{cn} is calculated by averaging the previous six frame values of random excitation gain $g_{cn}(n-i)(j)$, where random excitation gain $g_{cn}(n-i)(j)$ is equivalent to "said calculated norm" from Equation (10). Admittedly, *Jarvinen et al.* does not expressly use either of the terms "norm" or "smoothing", but one skilled in the art can readily see that Equation (10) discloses "a norm", and Equation (11) uses the norms calculated from previous frames to obtained a smoothed value $g^{mean}_{cn}(n)$, by dividing the sum of four subframes within the six previous frames by 4 and by 6.25, respectively.

Moreover, *Jarvinen et al.* meets the limitations of independent claims 1 and 20 to 22 of "changing the amplitude of said excitation signal in said period using both said calculated norm and said smoothed norm" and "changing amplitude of said excitation signal in said period using a relation between said calculated norm and said smoothed norm." In *Jarvinen et al.*, the smoothed norm, $g^{mean}_{cn}(n)$, is obtained from the norm,

$g_{cn}(n\text{-}i)(j)$, by Equation (11). Thus, there is "a relation between said calculated norm and said smoothed norm" because Equation (11) defines that relation, and the amplitude of the excitation is changed using smoothed norm $g^{mean}{}_{cn}(n)$. The amplitude of the excitation is changed using both the calculated norm and the smoothed norm because the excitation is scaled by gain $g^{mean}{}_{cn}(n)$, which includes both the smoothed norm $g^{mean}{}_{cn}(n)$ and the norm $g_{cn}(n\text{-}i)(j)$, as $g^{mean}{}_{cn}(n)$ is calculated based on norm $g_{cn}(n\text{-}i)(j)$, by Equation (11).

Applicant indicates that he wishes the phrases "using both" and "using a relation between" to be interpreted narrowly in accordance with the Specification, Pages 22 to 23. However, during patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) Thus, the terms "using both" and "using a relation between", as describing the step of amplitude changing the excitation signal, should be broadly construed. In fact, it is Applicant's calculation of a shape vector that provides smoothing of the excitation.

Applicant's Specification may disclose a different calculation for smoothing the excitation signal, but any distinction is not set forth by independent claims 1 and 20 to 22. Although the claims are interpreted in light of the specification, limitations from the

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Therefore, the rejection of claims 1 and 20 to 22 under 35 U.S.C. §102(e) as being anticipated by *Jarvinen et al.* is proper.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
6/9/05

Martin Lerner
Martin Lerner
Examiner
Group Art Unit 2654